

CLAIMS

Claims 1, 2, 3, 5, 6 and 7 were objected to and corrected as follows:

Claim 1 was objected to as lacking proper punctuation in line 8 after “open” where there is now a comma inserted. Also misspellings in the sixth paragraph from the end “inardly” has been replace by –inwardly-- and 3 lines later, “filed” has been replaced by --filled--. The foregoing were noted by the Examiner. Applicants found the following additional typographical errors and these have been corrected: in Claim 1: 5th line “thespecific” was replaced with --the specific-- ; in the 8th line “dischargeing” was changed to --discharging--. Two lines from the bottom of the claim --and the specific lighter liquid phase—was added before “are each discharged,” to make the claim read correctly. This is supported in the substitute specification at page 5 line 15-17. Additionally a clarification was made in the 7th paragraph from the bottom of the claim:

“forming an interface in the separation chamber between the specific lighter liquid phase and the specific heavier liquid phase;”

The specification at page 10, lines 23-25 specifically supports the added phrase where the term interface is defined as forming between the two phases while the original form of claim 1 only listed one of the phases, an obvious error in terminology.

Claim 2 is now set out on a single page.

Claim 3, line 2 --is-- has been inserted before “turnable”

Claim 5, line 4 “discharge” has been replaced by –discharged--.

Claim 6, line 3, -- of a-- has been inserted before “moment” to add clarity and also in line 1: “any of the claims” has been deleted to use proper claim dependency terminology.

Claim 7, line 3, “strive” has been replaced by –strives--, in line 5, --a—has been added before –increasing--. Also in line 1, claim 7 “the claims” was deleted to correct the claim dependency terminology.

The Examiners careful review is appreciated. The foregoing noted additional corrections and amendments have been made for clarity. No new matter has been added. The claims should now be in condition for allowance, in view of the earlier acknowledgement of allowability over the prior art of record.

Based on the foregoing, Applicants submit that the claims and the specification and figures in support thereof are in condition for allowance. An early action to that effect is earnestly solicited. Should any matter remain unresolved, Applicants respectfully request that the Examiner contact Applicant's representative at the number listed below. While Applicants believe no fees are due upon filing this response, please charge any deficiencies in fees to Deposit Account No. 503342.

Listing of Claims:

1. (Currently Amended) A method for adjusting an interface formed between a specific light liquid phase and a specific heavier liquid phase to a wanted radial level in a centrifugal separator, which includes:
a rotor having a rotation axis about which the rotor spins,

[-] an inlet chamber, in which a conduit for the supply of a mixture of [[thespecific]] the specific light phase and the specific heavier liquid phase, which is to be separated, opens,

[-] a separation chamber communicating with the inlet chamber,

[-] an outlet device for discharging [[dischargeing]] the specific light liquid phase separated during operation comprising, the outlet device an outlet passage connected to a radial inner portion of the separation chamber, and

[-] an outlet device for discharging the specific heavier liquid phase separated during operation, this outlet device comprising an outlet channel formed in the rotor extending radially and having an inlet opening at its radial outer end located at a certain radial level in a radial outer portion of the separation chamber, the outlet device at its radial inner end opening into an outlet chamber surrounding the rotation axis, in which the specific heavier liquid phase forms a rotating liquid body having a radially inwardly turned free liquid surface, the radial position of which during operation takes a position at a level in balance with the pressure prevailing in the separation chamber at the inlet opening, and in which a discharge device is arranged, which is non-rotatable with the rotor and has at least one internal discharge channel, which extends radially and at its radial outer end has an inlet opening and at its radial inner end is connected to an outlet, at least a radial outer part of the discharge device, in which the inlet opening is located, being movable in a way such that the inlet opening can be positioned in a different radial location in the outlet chamber,

the centrifugal separator further comprising means for the supply of a predetermined volume of the specific heavier liquid phase to the separation chamber, a first indicating means for indicating that the separation chamber during operation is filled up to a certain wanted level, means for keeping the separation chamber filled up to this radial level, and a second indicating means for indicating the radial position of the free liquid surface in the outlet chamber for the specific heavier liquid phase,

the method including the steps of

emptying the contents of the separation chamber;

positioning the inlet opening to a radial inner position in the outlet chamber;

supplying a predetermined volume of the specific heavier liquid phase to the separation chamber so that during rotation of the centrifuge the rotor fills radially inwardly to a radial level located inside of the inlet opening of the outlet channel, this radial level being such that the portion of the volume radially inside of the inlet opening is larger than the combined volume of the outlet channel and a portion of the volume of the outlet chamber;

supplying a mixture of the specific lighter liquid phase on the specific heavier liquid phase to the separator chamber via the supply conduit and the inlet chamber;

forming an interface in the separation chamber between the specific lighter liquid phase and the specific heavier liquid phase;

causing the specific heavier liquid phase to be pressed radially inwardly [[inardly]] in the outlet channel and further into the outlet chamber, thereby forming a rotating liquid body having a radially inwardly free liquid surface displaced inwardly until the separation chamber has been filled [[filed]];

sensing the radial position of the free liquid surface via the first indication means;

adjusting the position of the radial outer part of the discharge device so that the inlet opening is moved toward the free liquid surface is the outlet chamber, this movement continuing until the inlet opening reaches the liquid surface and the specific heavier liquid phase in the outlet chamber is discharged through the inlet opening and the discharge channel;

sensing that the heavier liquid phase is being discharged through the inlet opening via the second indicating means;

preventing the inlet opening from moving by means of a force transferring element acting on the outer moveable portion of the discharge device; and

allowing the centrifuge to operate so that separation takes place and the heavier liquid phase and the specific lighter liquid phase are each discharged, through one of the outlet devices while maintaining the desired radial level for the free liquid surface in the outlet chamber.

2. (Previously presented) A method according to claim 1, in which the centrifugal separator comprises a stack of conical separation discs arranged in the separation chamber, each one of which having a radial outer edge located at a radial distance from the inlet opening, said method further including supplying such a large pre-determined volume of the specific heavier liquid phase to the separation chamber that this volume during rotation of the rotor fills up radially inwardly to a radial level, which is located so much radially inside the inlet opening of the outlet channel that the volume portion of the supplied specific heavier liquid phase, which is located radially inside the inlet opening, at least is larger than the total volume of the outlet channel and a portion of the volume of the outlet chamber and the radial outermost third of the volume of the separation chamber, which is delimited radially inwardly by the radius of the outer edges of the separation discs and radially outwardly by the radius of the inlet opening but less than the total volume of the volume of the outlet channel and a portion of the volume of the outlet chamber and the portion of the volume of the separation chamber, which is delimited radially inwardly by the radius of the outer edges of the separation discs and radially outwardly by the radius of the inlet opening.

3. (Currently amended) A method according to claim 1, wherein in which the movable outer portion of the discharge device is turnable around a turning axis, which is approximately parallel to and eccentric relative to the rotational axis, that the position of the radial outer part of the discharge device is changed and the inlet opening is displaced towards the free liquid surface by turning the radial outer part around the turning axis.

4. (Previously presented) A method according to claim 3, wherein the radial outer part is turned around the turning axis in a rotational direction which is opposite to the rotational direction of the rotor.

5. (Currently amended) A method according to claim 3, wherein the radial outer part has a projection, the inlet opening being prevented from moving radially outwardly from the radial position it has obtained when the second indicating means has indicated that the specific heavier liquid phase is [[discharge]] discharged through the inlet opening and the outlet channel by putting an adjustable stop against the projection.

6. (Currently amended) A method according to [[any of the claims]] claim 3, wherein the radial outer part is turned in such a way that the inlet opening is displaced radially outwardly by means of a moment from the force transferring element in the form of a resilient element.

7. (Currently amended) A method according to[[the claims]] claim 6, wherein the radial outer part is influenced during operation by a moment from the specific heavier liquid phase present in the outlet chamber, which [[strive]] strives to turn this outer part in a way such that the inlet opening is displaced radially inwardly, which moment increases by increasing portion of the outer part being in contact with the specific heavier liquid phase into the outlet chamber and displaces the inlet opening radially inwardly when this moment exceeds the moment from the force transferring element.